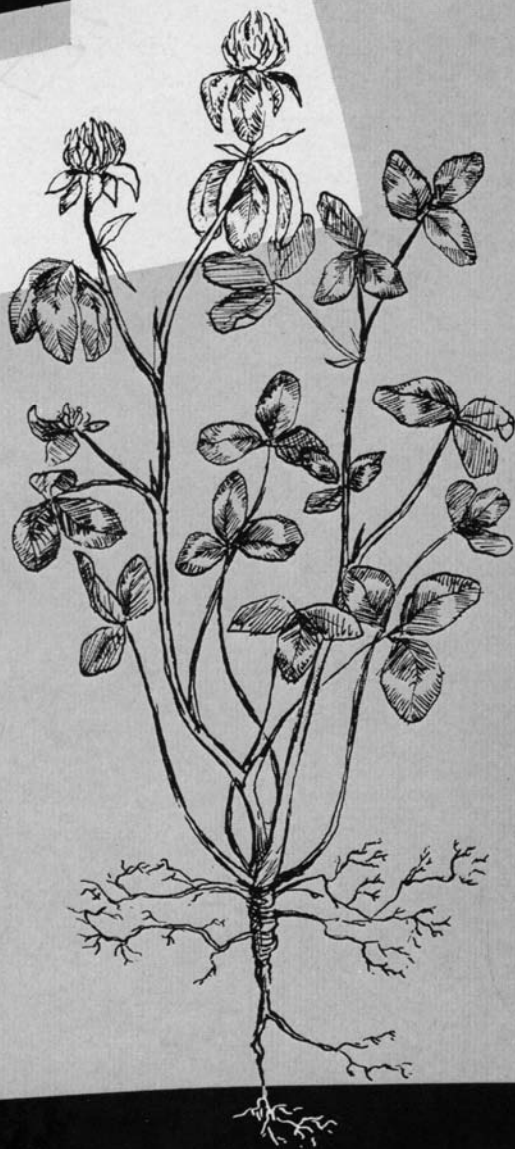


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GROWING RED CLOVER IN ILLINOIS

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RED CLOVER is used extensively in Illinois as a forage crop. In 1951 red clover planted alone covered 1,217,200 acres. In mixtures with other legumes and with grasses, it was grown on more than 1 million additional acres. During the past few years, however, the use of red clover has declined slightly because of difficulties in maintaining satisfactory stands and yields.

Much of the red clover is used for hay, but considerable amounts are used for silage, pasture, and for improving the soil. Seed is produced on many farms, but the yields are disappointingly low in large areas of Illinois.

Two closely related types of red clover, medium red and mammoth, are grown. Both are perennials and would, under favorable conditions, continue to grow through more than two seasons. In Illinois, however, plant diseases and insect pests damage red clover so severely that few plants survive the second summer. In its second year of growth, medium red clover usually produces a hay crop and a seed crop, or two hay crops. Mammoth clover may be harvested either for hay or for seed, but not for both.

Successful growing of red clover is not accidental. A knowledge of the conditions which contribute to success is important, and this publication is prepared for the purpose of supplying that knowledge.

Varieties

Kenland red clover, a medium variety developed by the Kentucky Experiment Station, is recommended for the southern two-thirds of Illinois. It has proved to be longer lived and more productive than Midland red clover or any of the local, unidentified strains of red clover common in the state. Kenland will frequently produce a second cutting of high-quality hay when the local strains produce a very weedy second cutting. You can purchase certified seed of Kenland red clover from most Illinois seed dealers.

For northern Illinois, Dollard red clover, another medium variety of Canadian origin, looks promising because of its winter-hardiness, resistance to northern anthracnose, and tolerance of aphids. Seed is not yet available but will be in two or three years.

¹ Prepared with the assistance of several members of the Agronomy Department.



4 ways to use red clover

For silage (top)

As hay (above)

For soil improvement (left)

As pasture (below)



Mammoth red clover is frequently grown throughout the state when soil improvement is the principal objective. It matures later than medium red clover and produces a larger amount of dry matter, but the quality of hay from mammoth red clover is not equal to that from medium red clover.

Good Soils Are Important

Like most farm crops, red clover grows best on well-drained soils that have good tilth and are well supplied with lime, available phosphate, and potash. Although red clover will survive on moderately acid soils, it makes its best growth when the lime requirement of the soil is satisfied.

To make sure there are plenty of plant nutrients, have your soil tested and apply fertilizers and limestone according to the needs indicated by the tests. Your farm adviser can tell you how to get your soil tested.

Red clover is grown on most soil types in Illinois but because of its need for moisture does not do well on those of a very sandy nature. Although good drainage is desirable, red clover will thrive on soils that are not adapted to alfalfa because of lack of subsurface drainage.

Methods and Time of Seeding

There are three common ways to seed red clover in Illinois:

1. Broadcast the seed on winter wheatfields in February or early March. Do not attempt to cover the seed because the soil is too wet to cultivate at this time of year. Alternate freezing and thawing will work the seeds into the soil sufficiently. Broadcast seed either with a windmill-type seeder or a horn seeder. You may divide the seeding, sowing one half in February or March, and the other half after the danger of frost is past.



Applying limestone to distinctly acid soil is necessary for best red clover yields.

2. Plant the red clover with any of the spring cereals, such as oats, barley, or spring wheat, as early in the spring as possible. If you use a drill, seed the clover and the cereal crop at the same time but leave the clover seed on top of the soil. When oats are broadcast and disked in, do not seed clover until after the disking operation.

When you seed red clover on the surface in the spring, cover it by rolling except when the soil is too wet. Seeding with a corrugated-type seeder is a very good method on most medium-textured soils because seeding and packing are accomplished in one operation.

3. If you are not using a companion crop, seed red clover in the spring any time until May 20 or in late summer from August 10 to 25 if soil moisture is adequate. When moisture is ample, use the corrugated-type seeder; if it is likely to be limited, drill the seed about $\frac{1}{2}$ inch deep and firm the soil with a corrugated roller after seeding.

Rate of Seeding

In central or northern Illinois when seeding clover in a small grain, use a spring-seeded grain as the companion crop. Eight to 10 pounds of good clover seed an acre will produce an adequate stand. When seeding in winter grain, use at least 10 pounds of seed an acre.

In the southern third of Illinois, the fall-seeded grains are better companion crops, because unfavorable weather conditions usually do not permit early seeding of the spring grains and with late seeding poor clover stands result. Use at least 10 pounds of seed an acre in this section of the state.

You can seed red clover from early spring until May 20 or in late summer from August 10 to 25. Whatever the time you select, a well-prepared seedbed increases the chance for a good stand of clover.



When clover seed is included as part of a mixture with grasses or other legumes, use 5 to 8 pounds of clover seed in the mixture.

Management

After the seedlings are established, certain precautions should be taken to protect the new stand.

Handle the straw from the companion crop in such a way that it is not left above the clover plants. Either remove it from the field or break it up enough for it to work down through the stubble to the ground. Most combines do not break up the straw sufficiently, but there are several types of field beaters on the market that can be used to shred both the straw and stubble on the field.

When the straw is put back on the field, the red clover seedlings will be killed wherever it is heavy enough to prevent them from drying out readily after a rain or heavy dew. Even shredded straw in large quantities may have this effect. There is some evidence that even if the plants are not killed their vigor is reduced. Straw on the field also gives cover for field mice which feed on clover plants during the winter months and sometimes kill nearly all the plants in adjacent areas. In a single field the areas damaged by mice may be several feet in diameter.

If you clip the clover about the middle of August during the first year's growth, you may take the clippings and straw for hay. It will not, however, be high-quality hay.

Harvesting the Hay Crop

The average yield of red clover hay in Illinois is $1\frac{1}{2}$ tons an acre. However, under favorable soil and seasonal conditions, 3 tons are frequently harvested.

Most of the red clover hay comes from the first crop in the second season. For the best yield of hay with the highest quality, cut during the half-bloom to full-bloom stage. Cut the second crop at the full-bloom stage. If allowed to become more mature, the quality of the hay will be lower.

One secret of making high-quality hay is in the curing process. Clover should not lie in the swath until completely cured. Leave the hay in the swath only until it is well wilted. Then windrow it and leave it in the windrow until dry enough to be put in the mow or bale. In this method few leaves are lost, most of the green color is retained, and the hay is easily picked up by the pickup baler. Windrowing is the best way to speed drying and at the same time obtain high-quality hay.



Although red clover can be harvested by several methods, baling from the windrow is one of the most popular and successful.

Red Clover for Seed

The average yield of red clover seed in Illinois is less than 3 pecks an acre. Some farmers, though, harvest regularly from 2 to 6 bushels. One reason frequently given for these higher yields is that they have occurred in areas where there are many pollinating insects such as bees and ground bees to fertilize the clover flowers.

Seed from medium red clover is generally harvested the second year, but occasionally you may harvest the year in which the crop is seeded. Harvest when heads have turned brown and seed is hard.

Combines are commonly used for hulling the seed, usually from the windrow. When fields of standing clover are combined, all the seed should be ripe and the plants thoroughly dry.

When mammoth clover is to be used for seed, do not harvest a hay crop.

Red Clover Diseases

Root rot causes more reduction in yields and loss of stands than any other clover disease. It is present on all red clover plants and is responsible for the eventual death of nearly every plant. The Kenland variety of medium clover has some resistance, and the best hope for control lies in the further development of resistant clover varieties.

Southern anthracnose is a disease of both stems and leaves that frequently kills the whole plant. It is present mainly in the southern half of Illinois. Again the Kenland variety has some resistance.



Northern anthracnose, a disease occurring in the northern half of Illinois during damp, cool weather in the spring and early summer may kill the leaves and parts of the stem but does not kill the plants. Most northern varieties have some resistance. The Dollard variety is probably most resistant, but seed is not yet available, although the supply is being increased.

Other diseases for which there is no good control include powdery mildew, mosaic, black stem, black patch, and rust.

Insect Pests of Red Clover

Grasshoppers, clover leaf weevil, pea aphids, sucking plant bugs, spittlebugs, and various other insects injure red clover and reduce the yield of forage and seed. You can, however, reduce or prevent the harm done by these insects by applying insecticides promptly in the spring.

Spittlebugs are relatively new in Illinois but have been a serious pest during the past few seasons. The loss they cause in clover forage and seed may vary from slight to 25 percent or more. Fortunately you can greatly reduce the damage by using such insecticides as lindane, benzene hexachloride, toxaphene, and methoxychlor. Apply these in late April or early May. Toxaphene must be used five weeks before harvests to avoid leaving a harmful residue. The others may be applied three weeks before harvest. For complete instructions on the control of spittlebugs, see Illinois Circular 689.